

523, 704

Pat'd 01/27/05

07 FEB 2005

(12) INTERNATIONAL PUBLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
19 February 2004 (19.02.2004)

PCT

(10) International Publication Number
WO 2004/015235 A1

(51) International Patent Classification⁷: **E06B 9/72**

(21) International Application Number:
PCT/EP2003/008699

(22) International Filing Date: 5 August 2003 (05.08.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
MI2002A001798 7 August 2002 (07.08.2002) IT

(71) Applicant (for all designated States except US): **JOLLY MOTOR INTERNATONAL S.P.A.** [IT/IT]; Viale Caproni, 13, Zona Industriale, I-38068 Rovereto (IT).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **SPERI, Michelangelo** [IT/IT]; Via Quar, 16, I-37029 San Pietro in Cariano (IT).

(74) Agent: **MITTLER, Enrico**; Mittler & C. s.r.l., Viale Lombardia, 20, I-20131 Milano (IT).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

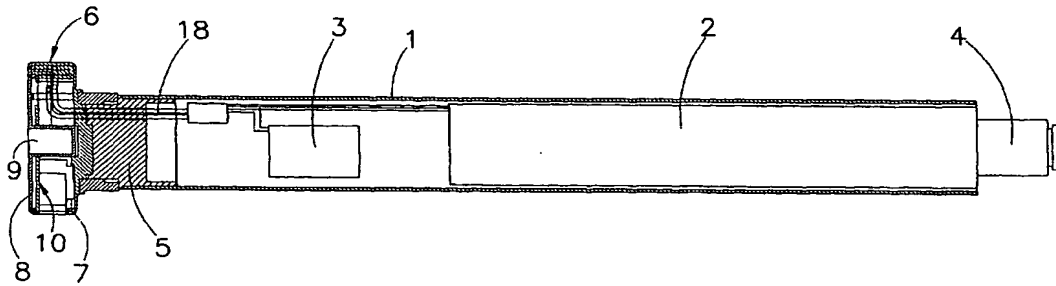
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designation US
- of inventorship (Rule 4.17(iv)) for US only

Published:

- with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: CONTROL DEVICE WITH INTERCHANGEABLE ELECTRONIC CARD FOR ROLLING ELEMENTS SUCH AS ROLLER BLINDS, ROLLER SHUTTERS, AWNINGS AND SO FORTH



(57) Abstract: A control device for rolling elements such as roller blinds, roller shutters, awnings and so forth, comprising an electric motor (2) housed inside a tubular casing (1), is fitted with an electronic control card (10) housed so that it can be extracted inside a box (7) fixed to an extremity of said tubular casing (1).

WO 2004/015235 A1

“Control device with interchangeable electronic card for rolling elements such as roller blinds, roller shutters, awnings and so forth.”

* * * *

DESCRIPTION

5 The present invention refers to a control device with interchangeable electronic card for rolling elements such as roller blinds, roller shutters, awnings and so forth.

 On the market there are various types of control devices for rolling elements, particularly devices that comprise an electric motor housed inside
10 a tubular casing together with an appropriate motion reduction gear, a braking device and an electronic control card. The latter often includes a radio receiver, that receives the signals emitted from ground by a radio transmitter and commands accordingly, the activation of the motor and, in some cases, the positioning of the electronic limit switches. In the latter case
15 inside the tubular casing there is also a device for detecting the angular position of the motor shaft and, more generally, the position of the rolling element.

 One problem with these control devices consists in that the access to the electronic control card, both for maintenance purposes and for purposes
20 of replacement and/or updating, depends on the more or less complete dismounting of the device itself to extract the card from the tubular casing in which it is housed. It is evidently a complex operation that makes any intervention on the electronic control card difficult to accomplish.

 Object of the present invention is to produce a control device for
25 rolling elements of the above-mentioned type, that permits easy and rapid access to the electronic control card.

 In accordance with the present invention said object is achieved with a control device for rolling elements, comprising an electric motor housed inside a tubular casing and an electronic control card for said electric motor,
30 characterised in that said electronic control card is housed in extractable way

inside a box fixed to an extremity of said tubular casing.

Every time an intervention on the electronic control card is required, either for maintenance or for updating or replacement, all that has to be done is to open the box that contains it, to extract the card and to place the same card again or another in the box.

This extractable card control system can be made compatible with a wide range of control devices with electric motor housed in a tubular casing (also called "tubular motor") and can operate the actuation controls of the motor and the regulation and continuous control of the limit switches.

The card can provide inputs for commands via cable, via radio, via infrared and via bus connection and can be configured in various ways in function of the work modalities and the way of receiving the commands.

The input commands can be given through control devices for the operation of the tubular motor. These devices can be normal command pushbuttons, pushbuttons of a radio remote control or external sensors used in the controls for wind, sun and rain protection for awnings and rolling elements.

Its direct power supply can even be provided by 230Vac/50Hz lines, 110Vac/60Hz lines or by lines in direct current at 12/24Vdc.

The characteristics of the present invention will be made more evident by the following detailed description of an embodiment thereof illustrated as non-limiting example in the enclosed drawings, in which :

Figure 1 shows schematically in a longitudinal section the array of an example of extractable card control device in accordance with the present invention;

Figure 2 shows in enlarged scale, sectioned according to line II-II of Figure 3, an extremity head of the above-mentioned control device, comprising a box for containing an electronic control card housed therein in extractable way;

Figure 3 shows said head seen from the left in relation to Figure 2 with

a covering element removed to show the inside of the head itself;

Figure 4 shows said head seen in section according to the line IV-IV of Figure 3;

5 Figure 5 shows in schematic perspective view the array of the electronic control card.

Figure 1 shows as an example an electronic control device according to the present invention, that basically comprises a tubular casing 1, inside which a motor group 2 is positioned composed, in an usual manner, of an electric motor with motion reduction gear and brake (components not shown in detail in the drawing). A capacitor 3 is also housed inside the tubular casing 1.

10 An output shaft 4 of the motor group 2, which extends from one extremity (right looking at Fig. 1) of the tubular casing 1, commands, by suitable means known per se and not shown in the drawing, the rotation of a supporting tube of the rolling element, which is positioned coaxially around the tubular casing 1 and is not shown either in the drawing.

15 A hub 5, to which is fixed a head 6 composed of a box 7 fitted with removable cover 8 with a central centering cavity 9 (Figures 2 and 3) extends instead integrally from the other extremity (left looking at Fig. 1) of the tubular casing 1.

20 The box 7 with relative cover 8 acts as a container for an electronic control card 10 housed inside the container itself so that it can be extracted.

25 An example of electronic card 10 is shown in Fig. 5 and comprises a printed circuit board 11, made in a U-shape, to which are fixed appropriate circuit components schematically indicated with the reference numbers 12-15, such as a transformer, a microprocessor, a radio receiver, a connector for bus, relays and others according to the foreseen functions, the command signals used and so forth.

30 A terminal board 16 fixed to the box 7 is positioned so as to receive suitable connection pins (not shown) extending from the board 11 and thus

making the electric connection between the components of the electronic card 10 and, on one side, an electrical supply cable 17 coming from outside the head 6 (Fig. 3) and, on the other side, electrical supply cables 18 for the motor group 2 (Figs 1-3).

5 Inside the head 6, near the electronic card 10, an encoder 19 is also positioned, for example of the Hall effect type, which through a pinion 20 and a crown wheel 21 (fig. 4) detects the angular position of a sleeve 22 integral with the support tube of the rolling element and duly communicate it to a suitable component of the electronic control card 10. The encoder,
10 known per se, permits the remote electronic regulation of the limit switches of the rolling element.

 The encoder 19 can be made through a linear or rotative potentiometer (variable resistance), which is capable of detecting the position of the rolling element. The encoder 19, represented here inside the box 7, can also be
15 positioned inside the tubular casing 1.

 For the maintenance of the electronic card 10 or for its replacement or for other reasons all that has to be done is to remove the cover 8 and to extract the card from the box 7 that contains it. When the maintenance or replacement has been done, the card 10 is repositioned and the cover 8
20 brought back into a position closing the box 7.

 As can be seen, the rest of the control device, and particularly everything that is inside the tubular casing 1, is not touched.

CLAIMS

1. Control device for rolling elements such as roller blinds, roller shutters, awnings and so forth, comprising an electric motor (2) housed inside a tubular casing (1) and an electronic control card (10) for said electric motor (2), characterised in that said electronic control card (10) is housed in extractable way inside a box (7) fixed to an extremity of said tubular casing (1).

2. Control device according to claim 1, characterised in that said box (7) is fitted with a removable cover (8).

3. Control device according to claim 1 or 2, characterised in that said electronic control card (10) can be connected to a terminal board (16) to which are connected an electrical supply cable (17) coming from outside the box (7) and electrical supply cables (18) for said electric motor (2).

4. Control device according to any of the previous claims, characterised in that to said electronic control card (10) is associated an encoder (19) for detecting the position of the rolling element.

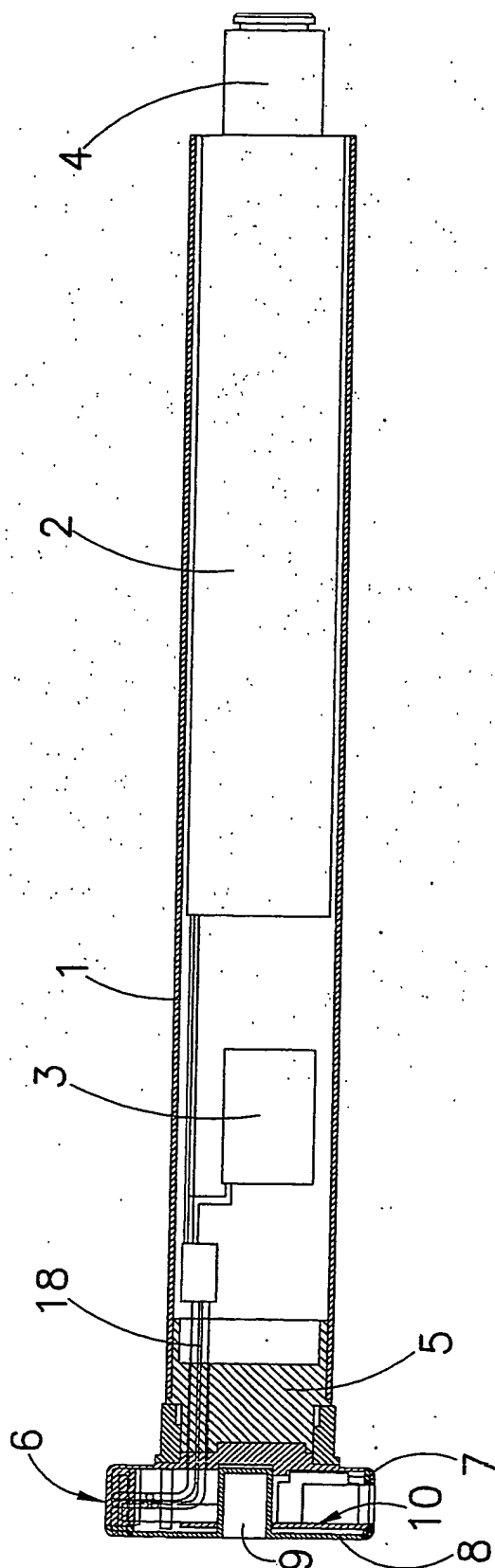


FIG. 1

2/3

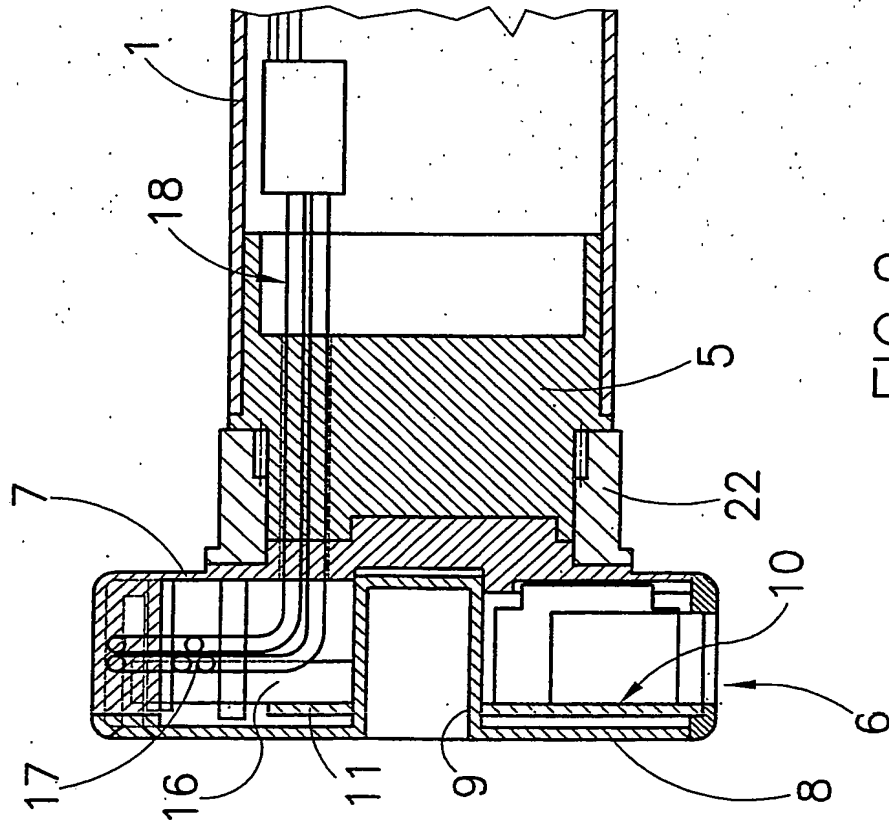
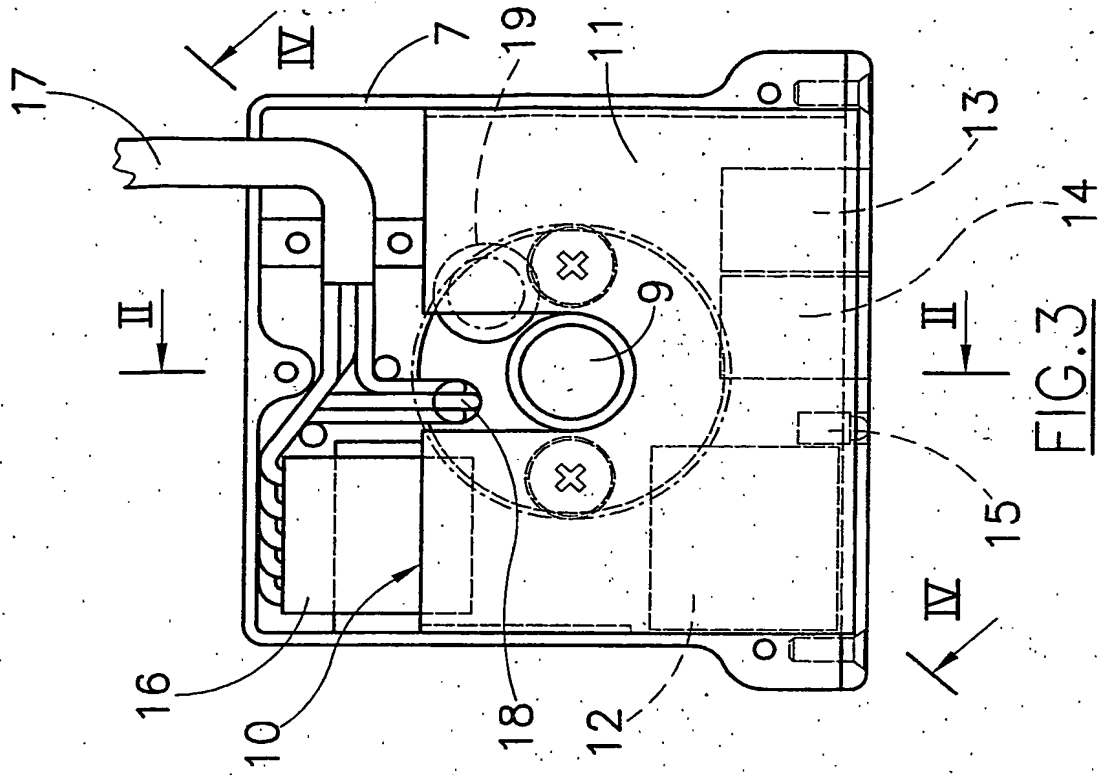


FIG. 4

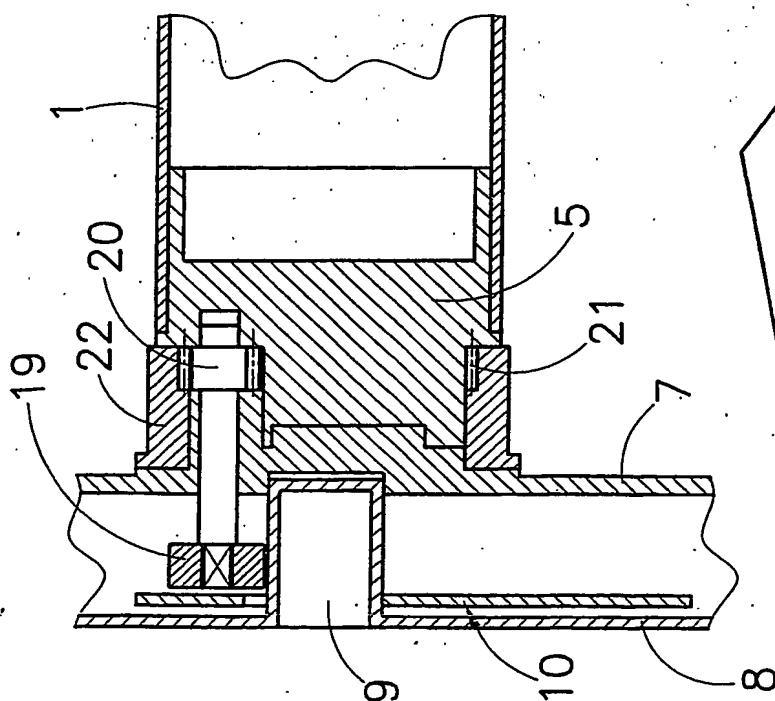
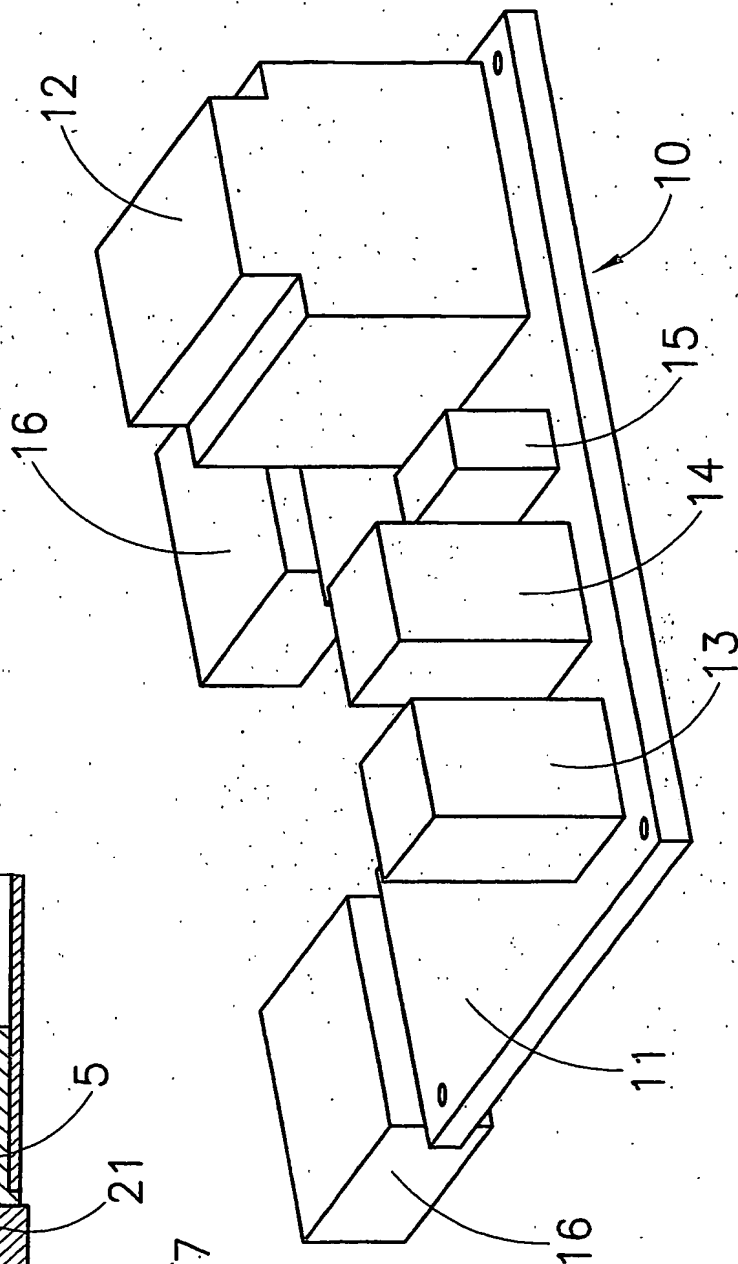


FIG. 5



INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/08699

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 E06B9/72

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 E06B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 513 794 A (RADEMACHER WILHELM) 19 November 1992 (1992-11-19) column 4, line 36 -column 7, line 6; claims 1-4; figures 1-3 ---	1-4
Y	EP 0 852 281 A (FONDEVILLA CALDERON JOAQUIN) 8 July 1998 (1998-07-08) column 4, line 39 -column 6, line 29; claim 1; figures 1-5 -----	1-4

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

19 November 2003

Date of mailing of the international search report

28/11/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Merz, W

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/08699

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0513794	A	19-11-1992	DE 9106033 U1 AT 114018 T DE 59200759 D1 EP 0513794 A2	17-09-1992 15-11-1994 15-12-1994 19-11-1992
EP 0852281	A	08-07-1998	ES 2126508 A1 ES 1036602 U1 EP 0852281 A2	16-03-1999 01-10-1997 08-07-1998